

WHAT IS CLAIMED IS:

1. A method of manufacturing a wear resistant shoe,
comprising:

5 cold-heading one end portion of a generally cylindrical blank to
radially increase and axially diminish the dimensions of the one end
portion, and to work harden the one end portion while leaving an opposite
end portion dimensionally unchanged; and
subsequently cold-working and thereby hardening the opposite end
10 portion.

2. The method of claim 1, including the additional steps of:
machining the cold-headed blank prior to cold-working to form a
hollow skirt in said opposite end portion for receiving a rounded end of a
piston rod.

15 3. The method of claim 2, wherein the step of cold-working
comprises crimping the skirt about a received piston rounded end, joining
the shoe and piston, and work hardening the skirt.

4. The method of claim 3, further including the step of machining
the one end portion to predetermined final dimensions subsequent to the
20 step of cold-heading and prior to the step of crimping.

5. The method of claim 3, further including the step of machining
the cold-headed end portion to form a cam engaging wear resistant
surface.

25 6. The method of claim 5, further including the step of surface
hardening the machined cam engaging surface.

7. The method of claim 6, wherein the step of surface hardening
comprises application of a TiN material.

8. A wear resistant shoe manufactured according to the process of
claim 1.

30 9. The method of claim 1, wherein the cylindrical blank comprises
an alloy of cobalt

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depth;
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and

~~portion.~~

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15. A method of forming and assembling a piston and wear resistant shoe, the shoe formed from rod stock of a diameter less than the greatest diameter of the finished shoe, comprising:

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17. The method of claim 16 further comprising the step of surface hardening the upset one end.

18. The method of claim 15 further comprising the step of work hardening the periphery of the hollow region during the step of crimping.

19. A method of forming and assembling a piston and wear resistant shoe, the shoe formed from hardened rod stock, comprising:

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forming a hollow region in one rod stock end portion;

annealing the one end portion of the rod stock; and

crimping the periphery of the hollow region about a rounded end of the piston rod.

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20. The method of claim 19, including the additional step of machining an opposite end portion of the rod stock to form a cam engaging wear resistant surface.

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21. The method of claim 20, further including the step of surface hardening the machined cam engaging surface.

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22. The method of claim 19, wherein the step of crimping work hardens the one end portion.

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